Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

LIBRARY
RECEIVED
★ MAR 7 1928 ★
U. S. Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

BRANCH OF RESEARCH

MONTHLY REPORT

OF

FOREST EXPERIMENT STATIONS
FOREST PRODUCTS
FOREST ECONOMICS
RANGE RESEARCH

JAN 1928

U. S. GOVERNMENT PRINTING OFFICE: 1927 J84289

1.9
F763C

747240

BRANCH OF RESEARCH

January, 1928

CONTENTS

	Page
Foreword	1
Forest Experiment Stations	2
Washington office	2
Northeastern	4
Central States	5
Lake States	7
Appalachian	10
Allegheny	12
Southern	14
California	17
Pacific Northwest	21
Northern Rocky Mountain	24
Rocky Mountain	25
Manuscripts	27
Forest Products	30
District 1	30
District 6	32
Range Research	35
Washington office	35
Santa Rita	37
Jornada	39

FOREWORD

From "Differential Equations Subject to Error, and Population Estimates," by Harold Hotelling, Food Research Institute, Stanford University.
(In Journal of the American Statistical Association, September, 1927)

Sir Isaac Newton set a bad example for statisticians in his mode of establishing the relation which has been the admired model of scientific achievement for two centuries and a half. Were the solar system subject to a complicated set of unknown forces of as great an order of magnitude as the sun's attraction—such a set, for example, as may exist in a nebula or near a multiple star—Newton could not have established gravitation by means of Kepler's laws, which deal with an orbit as a whole. A statistical method would have been necessary; Newton would have been obliged to study the curvature of paths and the acceleration at various points by means of the second differences of the coordinates of the planets' positions, and then to investigate the correlation between the acceleration, thus determined, of one body toward another and the distance between the two.

A great historic method of scientific discovery has thus arisen from an astronomical accident. If only our tyrannical sun were smaller, the family of planets would enjoy some of the chaos of democratic societies, and the astronomer would be closer to the statistician. Science would have arisen later and statistics earlier. Those astronomers who still feel a suspicion of quackery about statistical methods, particularly correlation, may reflect on how narrowly their own science missed having to wait for these very methods before emerging from the embryonic stage.

-----#-----

Note: It is to be hoped that forestry may soon emerge from the embryonic state!

(Over)

FOREST EXPERIMENT STATIONS

Washington

General

With the beginning of the new year, Washington has taken on a more active appearance, with Day, Schnur, and Buell to work on the oak volume and yield study, with Kotok to put through on the machines his statistical study of fires in California, with Zon to testify before the House Flood Control Committee, and Wheaton to consult on the spruce yield study. Martell arrived to take up his duties in Measurements, and Reineke returned from an extended visit to the Appalachian Station. In the offing are the arrival of Pearson from the Southwest for a two months' detail, E. W. Nelson from the Great Basin, and Matt J. Culley from the Santa Rita. As an offset to this group, Eyre left for a visit to the Southern Station to be gone several weeks, and Marsh made a short visit to the Northeast.

Inter-Bureau Forest Research Conferences

In order to bring about a better understanding of the work and problems of the various units interested in phases of forest research, a series of conferences or seminars have been planned for the winter. At these meetings various topics will be taken up in which allied branches of work will be freely discussed. At the first meeting general station cooperative problems were discussed from every angle, and all who participated held the opinion that the meeting was worth while. While primarily for the benefit of those in Washington during the winter, there are many visitors, not alone from the forest experiment station staffs, but specialists in other fields. This keeps us from becoming bureaucratic (?) or too Washingtonized. Topics for meetings tentatively planned include the larch sawfly, blister rust, bark beetles, root and other rots, the biological factor, experiment station programs, biometry, and wild life. As there is no fixed program or time scheduled, meetings are called as opportunity presents special speakers in the way of Washington visitors. The meetings last about two hours. Similar conferences might well be held at some of the stations.

Seed Tests

The California Station desires us to announce that they are in a position and willing to undertake some seed dissemination tests this winter in the campanile of the University of California. Those with seed to test should get in touch promptly with the Station.

Biological Section

Because of health considerations, it has been necessary for Bates, reluctantly, to withdraw from the newly-created Biological Section of the Laboratory in which, however, he will still retain interest. Bates becomes a member of the Lake States Station on February 1. The Biological Section of the Laboratory will be under the direction of Arthur Koehler.

Boyce on His Way

Word from Portland indicates that Dr. J. S. Boyce will assume the directorate of the Northeastern Forest Experiment Station on the first of March. As he plans on visiting a few places enroute across the country, he will probably not reach Amherst until about the middle of the month.

Measurements

Shortly after the first of the year the work of the Section was rather badly disorganized by the study of National Forest Taxation, which occupied a good third of the available time. The data for this study, carried on in the field by the National Forests, were compiled by the District offices and summarized here for the entire country. Much additional work needs yet to be done upon this but probably not by RS. In addition to this extra work, Dr. Cary had some cordwood volume table data which had to be recomputed. This required some 20 per cent additional time. The net result of these rush jobs was a decided setback to our own work. In the tabulating work 85 per cent of the time was devoted to the California fire study and 15 per cent to the completion of the Northeastern fire work.

Library

Last month the library loaned 1036 books and periodicals, and 149 members of the Service and others consulted the library in person.

There were 204 books and magazine articles indexed for the library catalogue during the month.

-----#-----

NORTHEASTERN FOREST EXPERIMENT STATION

A further analysis of some of the data gathered by Westveld from the permanent slash disposal plots established on the Cherry Mountain sale area discloses some interesting figures with respect to the proportion of the hardwood stand which is considered unmerchantable because of defects of various kinds. The experiment covered an area of approximately eleven acres, which supported a stand of timber averaging 11,600 feet per acre, 8,800 feet being hardwoods and 2,800 spruce and fir. Of the 8,800 feet of hardwoods 4,410 feet were classed as cull trees, leaving barely 50% of the hardwood stand as sound material. A large number of the so-called unmerchantable trees were "wolf" trees. The policy is followed of felling these trees as soon as logging is completed on the principle that such trees would otherwise occupy valuable growing space which should be in possession of a new incoming crop. Some foresters contend that wolf trees and other unmerchantable trees should not be cut for several years following logging, because of the beneficial effect such trees exert as nurse trees in protecting young reproduction from undue exposure to sun and wind. Last summer two plots were established, one plot to be clear cut of all timber, the other on which unmerchantable and wolf trees are to be left to determine the effect of the two different treatments on the development of the young stand.

On the invitation of the Quebec Forest Industries Association, Limited, Stickel attended the meeting of the managers of the association at Montreal on January 25 to present a paper on "Forest Fire Weather Research." The meeting was attended not only by the managers, but also by private foresters, members of the Quebec Forest Service, and meteorologists of the Dominion Service. Fire weather research is arousing much interest in Canada. A fire weather warning service was instituted in the provinces of Quebec and Ontario last year, and it is expected that the service will be expanded soon

to cover all of Canada. Splendid cooperation in this work is being secured between the government and private timberland owners and associations. Stickel had an opportunity to discuss fire weather work with Mr. Piche of the Quebec Forest Service and Mr. Chilcott, in charge of the forecast issued by the Dominion Meteorological Office at Toronto. Stickel also attended the meetings of the Canadian Forestry Association and the Woodland Section of the Canadian Paper and Pulp Association. At the latter, very interesting discussions followed the presentation of papers on "Regeneration for Pulp" by Mr. McCarthy, and "Logging in Relation to Forest Management" by Mr. Claridge of the International Paper Company.

P. M. Barr, Director of Research in British Columbia, who is working for his Doctor's degree at Yale School of Forestry this year, visited the office during the month. Mr. Barr's problems are very similar to ours, and he was especially interested in our work on spruce reproduction.

-----#-----

CENTRAL STATES FOREST EXPERIMENT STATION

General

The last week in January at the Ohio State University was marked by the annual Farmer's Week program with an attendance of 6700 persons during the week. The Ohio State Forestry Association held its winter meeting in conjunction with this larger meeting. McCarthy presented a paper at the Ohio State Forestry Association session, describing the work of the Forest Experiment Station.

Lewis R. Smith indicated that final decision as to the future use of the Camp Knox Forest would soon be made. The Station is interested in this, the only National Forest in our territory.

Cooperation has been offered by the Mead Pulp and Paper Company in a study of burning as a preparation for planting on their land near Chillicothe and in the study of regeneration of flooded lands on islands in the Mississippi River.

Forestry Instruction at Ohio State University

Instruction in several forestry courses at the University is given as a part of the work of the Agricultural College. One in-

structor is employed. This is the status which forestry teaching has reached since the abandonment of the four-year course leading to a degree in forestry. Forestry is nominally scheduled in the department of Horticulture but because it gets little recognition in that department, students have difficulty in election of forestry courses. The result has been a steady falling off of registration until University authorities threaten to abandon all forestry courses. Conferences have been held with the Dean of Agriculture and the President of the University to get the matter righted so that students can at least elect forestry subject matter. This seems vital since agricultural students are getting no forestry instruction, even those who later become farm bureau agents in heavily timbered counties.

The Ohio State Forestry Association took action recommending adequate forestry instruction for agricultural students.

McCarthy is giving a series of lectures in one of the forestry courses, during the present quarter.

Program

Meyer assembled the records of publications and projects now current in the territory of the Station. This is to be prepared for circulation to outside agencies.

Oaks

Work on the scarlet oak volume tables occupied the time of Kellogg, Hanley and Bower during the month. Other tables of volume are being computed in Washington.

Yellow Poplar

The yellow poplar manuscript, reviewed by the Appalachian Station was forwarded to this Station for slight revision.

-----#-----

LAKE STATES FOREST EXPERIMENT STATION

After a lapse of two months, the Lake States Station is again catching up with itself. This report is, therefore, extended to cover all the activities deserving mention for the past three months.

Zon attended the conference of forest schools and the meeting of the Society of American Foresters in San Francisco in December, talking before the latter on the subject of the circulation of water on the earth's surface. During January he spent nearly three weeks in Washington, D. C., in connection with the hearings before the House Committee on Flood Control.

Upper Peninsula Branch

The Upper Peninsula Branch Station was closed for the winter late in November. The experimental cuttings in virgin northern hardwoods were nearly completed at that time. Three kinds of cuttings were tried out this year: clear cutting (5 acres), the conventional method where all material down to 6 inches is merchantable for chemical wood or fuel; cutting to a fairly rigid diameter limit of 12 inches (5 acres), representing a commercial operation for sawlog material only; and a heavy selection cutting (10 acres) aimed to leave the stand in the best silvicultural condition for future growth and development regardless of size of trees removed. The latter removed about 63 per cent of the merchantable board-foot volume. Permanent sample plots will be established in these areas as in the 1926 cutting.

Permanent sample plots were established in the drained swamp and in an area cut clear of virgin hardwoods nine years ago. Studies were also made on a check plot adjacent to the latter, representing conditions in the uncut forest. But little effect of drainage in the forested swamp is yet apparent and it will probably be necessary to deepen and extend the ditches to secure the desired results.

The meteorological data secured from observations of the last two years at the three stations in the open, the virgin forest, and the cut-over swamp have been summarized and compared. In addition to confirming for the northern hardwood type the well known differences between open and forest conditions, the study is furnishing basic information which helps to explain and further emphasize the advantages of selective methods of cutting as compared with clear-cutting in this type. A fourth station to be established this year in the selective cutting area will give more direct evidence on this interesting phase.

Michigan Fire Study

Mitchell spent several weeks in Lansing collecting material for the publication on forest fires in Michigan, which will follow in a general way the bulletin on Minnesota fires now being printed. Averell has been editing the fire cards, while Mitchell was working up the general material. The basic material is being brought up to date by transferring the fire data for the last three years to punch cards.

Aspen Study

Kittredge has been preparing the manuscript on Aspen which will be completed this spring The related data secured in this study from thirty plots of paper birch were also worked up, but are insufficient for regular yield tables on a site index basis. A summary of the results for the individual plots will be published, however.

Spruce Volume Table

Advantage was taken of a cutting in black spruce near the Cloquet Station to secure data for the preparation of volume tables for this species, for which no reliable tables are now available. Taylor, with an assistant from the Minnesota Forest School, made complete measurements on 93 trees from 4 inches to 9 inches D.B.H. The wood, in the form of 8-foot pulpwood bolts, was also piled and measured as a basis for computing cordwood converting factors.

Type Map

A preliminary forest type map of Minnesota was prepared, partially in response to the call of the state Reforestation Committee. All available sources of published information were consulted, and advice and inspection by many people familiar with the state helped to complete the picture. While far from complete or accurate, the map furnishes a working basis which may be corrected from time to time. The attempt emphasizes how little we know in detail as to where the different types are.

Reforestation Committee Hearings

An event of outstanding importance in state forestry, in which the Station took part, was the hearings conducted by the Interim Committee on Reforestation of the Minnesota State Legislature from Janu-

ary 24 to 26. This Committee, with Lieutenant-Governor Nolan as its chairman, was appointed by the last Legislature to study the forestry situation in Minnesota and to submit at the next session a report and recommend legislation to meet the state's needs. The public hearings were an important feature of its work.

Representatives of the Forest Service at the hearings included Associate Forester Sherman, District Inspector Hoar, Supervisors Hamel of the Superior and Hopkins of the Minnesota National Forest, ex-supervisor Marshall, H. H. Chapman of the Forest Taxation Inquiry, and J. Kittredge of the Lake States Forest Experiment Station. In accordance with a previous request, Kittredge presented information on the subject of growth, yield, and possible profits in the various forest regions of the state.

The hearings were quite worth while. The entire Committee is keenly interested in the forestry situation and possibilities of improvement. Lieutenant-Governor Nolan made an excellent chairman, drawing out much valuable information by his intelligent questions. So far no definite conclusions have been stated in the form of a commitment on the part of the Committee, but it is believed that the "airing" of the subject has been very helpful.

The future of cut-over lands in the northern part of the state is one of the puzzling questions that was considered at length. The present status and possibilities of public and private forestry, timber growth, recreational interests, relation to county finances, and other phases were discussed. The statements of representatives of two of the largest timberland owners in the state showed an interesting difference of viewpoint. Mr. Backus said that private forestry would be impossible unless cut-over lands were released entirely from taxation for from three to six generations, and even then was a doubtful matter. Mr. Rudolph Weyerhaeuser stated that his company is ready to undertake an active program of reforestation on 200,000 acres which would be entered under a special forest tax law such as that recently passed if the rate were reduced to 5¢ per acre as a general tax and a 10 per cent yield tax.

The need for a state forest nursery to produce planting stock for reforestation was stressed by several speakers. The chief opponents to its establishment, the commercial nurserymen, failed to produce convincing data to support their contention that it would ruin their business.

Questions indicated that there is some doubt in the minds of the Committee whether or not the present organization of the state Conservation Commission is the most satisfactory one to handle the land policy in its relation to forest lands. A readjustment of authority seems to be desirable.

While the state forest fire protective system is functioning very effectively in ordinary years, there is a need for additional appropriations for fire protection which will enable the organization to be developed to meet the peak loads of a bad season such as in 1923.

-----#-----

APPALACHIAN FOREST EXPERIMENT STATION

General

Computing and report work occupied the staff during the month. Scholz and Morey finished the punching and checking of the strip data in the study of cut-over hardwood lands. They then checked the computations in the spruce regeneration study. Nothstein and Ziegler made considerable progress in coding and tabulating the loblolly pine data preparatory to putting it on punch cards. MacKinney devoted some time to putting the records on the chestnut replacement plots in permanent form.

Frothingham and Korstian made a hurried trip to Durham, Raleigh, Petersburg and Charlottesville for conferences with the State Foresters of North Carolina and Virginia and to determine the suitability of the Lee National Forest and the Duke University lands for silvicultural research. The University owns about 4,000 acres of land adjacent to its new campus, about 70 per cent of which is now covered with forest growth varying from Piedmont hardwoods to pure pine. Several excellent stands of loblolly and shortleaf pine were visited. The University is considering devoting the open land to forest plantations and arboreta. The wide variety of conditions on the tract and its proximity to the campus would make it a very desirable experimental and demonstration forest for a well-equipped school of forestry. The tract is also very close to the city of Durham, which should insure a good market for a variety of forest products.

The visit to the Lee National Forest was in company with Supervisor Sears, Messrs. Roberts and Oliver of the Lee, and W. L. Cooch, District Forester of the Virginia Forest Service. Although loblolly pine is the principal stand on the Lee, there is a considerable diversity of forest conditions and apparently quite a variety of problems to be solved. Because of its proximity to Petersburg and the sulphate pulp mill at Hopewell, a good market is assured, particularly for pine.

Forstassessor H. F. von Maltzahn, of the Mecklenberg State Forest Service in Germany, spent about a week at the Station, making

trips to the Smoky Mountains, Pisgah National Forest, the Biltmore Estate, and the Bent Creek field laboratory. Mr. von Maltzahn made the trip from New Haven by automobile and went on from Asheville to New Orleans, visiting the Nantahala National Forest enroute. In this territory he was interested particularly in the growth of red oak, yellow poplar, black walnut, and hickory, with reference to their possible use in Germany.

Forest Entomology

In the early part of December Dr. Craighead and J. A. Beal, accompanied by Wyman, of the Southern Station, spent about a week in northern Florida inspecting injury caused by the turpentine borer on experimental turpentining plots of the Forest Service. Of late this insect has been causing considerable apprehension on the part of owners of timber land who are attempting to practice forestry in the Coastal Plain region The scheme of management adopted calls for long-time, conservative turpentining operations, and ultimate utilization of the timber, in lieu of the more destructive methods of turpentining practiced in the past. This borer has been found to attack the faces of turpentined trees after they have been exposed from four to five years, causing serious defect in the butt log and a high percentage of windfall. It appears, however, that the problem may be easily handled by slight modifications in the present conservative standards for turpentining recommended by the Forest Service.

Further observations of the effect of low winter temperatures upon the overwintering broods of the southern pine beetle were made by Beal during late December and January. The temperature fatal to part of the brood (namely larvae under bark) occurs between 10° and 15° F. Zero temperatures have been found to be fatal to all of the active brood. Beetle eggs, however, were found to be resistant to -5° F. Since overwintering eggs represent but a small per cent of the dormant brood, it may rightly be assumed that zero temperatures practically eliminate this insect from the forests. Protected places such as the bottom sides of fallen logs, large slash, etc., furnish protection for this insect against severe cold (-5°F.). Regions where zero temperatures were reached will probably be safe from the destructive work of the southern pine beetle until the late summer or fall of 1928.

-----#-----

ALLEGHENY FOREST EXPERIMENT STATION

Temporary quarters at Philadelphia were occupied for the first time on January 3. These consist of three small rooms in a dwelling house used by the University for administrative purposes and graduate instruction, and although fully occupied now with furniture they will serve their purpose until March, during which month we hope to move into permanent quarters. A little while was spent in getting settled, and in making various contacts with the University, particularly the Department of Botany. We also made the acquaintance of the Pennsylvania Railroad foresters, and from one of them, Secretary Round of the Allegheny Section of the S.A.F., learned that the station will be the chief topic of discussion at the Section meeting at Harrisburg in March. We will certainly welcome this opportunity to place our work before the foresters of our territory and to obtain their ideas as to what lines of investigation will be most profitable to them.

Schnur left for Washington on the 15th to participate in the computations of volume and yield of oak, under the leadership of the Central States Station. We hope to have him return in two months well versed in all the mysteries of anamorphosis, standard deviation, and coefficients of correlation.

A beginning has been made on placing the headquarters tract at Camp Ockanickon under management. Taking advantage of good ice, Wood, Hough, and Schnur mapped the boundaries of the two ponds, a very essential step in determining how much land is actually available to our use. Wood has also traversed the important roads, and is formulating plans for fire line location. In attempting to reduce all available data to map form he has encountered the customary difficulties with surveys made on magnetic bearings at diverse times, and often indifferently recorded in deeds. A certain amount of rerunning of boundary lines seems unavoidable. In order to gain firsthand knowledge of the latest practices in fire line construction in south Jersey, Wood started on a trip through the south Jersey state forests at the end of the month. The deepest snow in many years in that territory put an end to his explorations with Associate State Forester Baker, but not before he had seen some very interesting plantations. Possibly the most impressive sight was white pine, unhampered by the weevil, growing vigorously on south Jersey sands.

Forbes and Hough arrived on the Allegheny National Forest on January 22, just in time to let themselves in for our first real investigative job. Up to this year practically the entire effort of the Forest has been directed toward acquisition and protection. Last fall, however, an opportunity arose for the sale, on a couple of hun-

dred acres, of some excellent second-growth hemlock, birch, black cherry, beech, and basswood. Junior Forester Stone was authorized by the Supervisor to lay out in the sale area three sample plots of one acre each, with a two-chain isolation strip all the way around, for a comparison of growth under natural conditions and under two styles of cutting. One of these plots had been marked with an eye to selling everything merchantable for sawlogs or chemical wood above certain fixed diameter limits; a second plot was marked for cutting in such a way as to remove chiefly the defective and less valuable individuals and species, allowing the balance to accelerate in growth. Since we had few ideas of our own to offer in the way of marking a type as yet unfamiliar to us, we were glad to accept the marking of the local men and direct our efforts to determining the results of their efforts. These results will certainly include a certain amount of accelerated growth among the trees left, and reproduction under a great variety of conditions. We accordingly agreed with Supervisor Bishop to take over the two marked plots and the unmarked check plot, and have begun some fairly intensive studies. The chief features of this to date have been the running of reproduction strips across the area in advance of logging, in order to establish the damage to advance growth, and a crown map of the plots. Crown mapping with snow drifting down on the traverse board did not prove an unalloyed joy, but was not impossible. On the 28th, Forbes left Hough to complete this map, with the aid of local men generously put at our disposal by Supervisor Bishop.

Forbes had an extremely profitable two days in Pittsburgh. In addition to getting acquainted with Dr. O. E. Jennings of the University of Pittsburgh and the Carnegie Museum, he succeeded in finding a last minute place on the program of the annual meeting of the Pennsylvania Retail Lumberman's Association, his efforts being cordially received. Dr. Jennings introduced him to many of the specialists at the Museum, and discussed in some detail the botanical work of the University and Museum. Earlier in the month Forbes and Hough visited New Brunswick, where under the guidance of Dr. A. P. Kelley they met many of the faculty of Rutgers University and of the staff of the agricultural experiment station.

In intervals between field trips Forbes has made substantial progress in the revision of his southern pine growth manuscript; Hough has begun a systematic review of the work so far done in the recognition of forest types in our region; and Wood has been investigating the literature on thinnings in our territory or with our species. We are gradually orienting ourselves, and making ready to draw up tentative recommendations on a program.

-----#-----

SOUTHERN FOREST EXPERIMENT STATION

General

Mrs. Terberg spent the greater part of the month revising library card citations to conform to the system used for Biological Abstracts. This work is part of the general overhauling and revision being given our library, which now includes a practically complete series of soil surveys for our region, files of 17 periodicals (not counting house organs), 280 books, approximately 1700 bulletins, circulars, pamphlets, state publications and reprints, and approximately 2000 manuscript reports, abstracts, and clipped articles. We also have more than 2,000 photographs. The only fault to be found with this extremely valuable mass of information is that it has never been adequately indexed. Old cards are now being made uniform, and all new items not only indexed as they come in, but more thoroughly cross-referenced than was our former custom. For both library and photographs we use the standard "Classification of Forestry" compiled by the Society of American Foresters.

Protection, Fire

Gemmer calls attention to a serious error in the November report, a statement that plow and tractor proved ineffective in making a fire line on the Choctawhatchee. In the first place, the operation was not fire line construction but land clearing and breaking for a planting experiment. In the second place, the tractor was light and the plow was an old road plow without a coulter, unsuited to plowing in brush. Since the completion of this work a test has been made of tractors and graders in clearing fire line, with excellent results, especially with the heavier equipment. The grader cleared off all brush at ground level and made such an effective line that one man could mop up behind the machine. Lighter machinery traveled more rapidly but the line was neither as clean nor as straight.

At Urania, Barrett, Demmon, and Eyre obtained excellent burns on the Roberts and Elk Pasture plots and a somewhat slower fire on the Greeley Pasture plot. The five-year remeasurements were made on two plots. While Eyre was at Urania, he and Barrett had to fight fire which got into the north side of Greeley pasture.

Management

Gemmer and Lloyd also continued with their study of root systems at Camp Pinchot, finally getting one small longleaf out entire by means of a strong current of water from the pump on the Products Laboratory plot. They also established a new plot for the study of competition, clipping off all competing roots within a radius of five inches of each longleaf seedling by means of a shovel designed originally for laying tile drains. Thirty-five longleaf seedlings are included in this plot.

Wahlenberg installed and described the first third of 180 longleaf seed spots put in near the quadrats in the McNeill pasture. These spots are located on a variety of grass types, and on different sorts of cover, depending on the grazing and burning history of the area. Each spot contains 100 seeds, dropped lightly on the existing cover. Half of the plots will be protected with 1/4-inch-mesh cages and the other half left exposed to birds. The test is designed not only to show the effect of different sorts of cover on seed penetration, destruction, and germination, but also to furnish a check on the original seed fall on nearby quadrats as indicated by the newly established seedlings from the 1927 seed crop. Although the heavy seed crop resulted in abundant seedlings at McNeill, it is interesting to observe from 3 to 15 seeds stuck wing first into the cracks in the tops of every stump on the area. The hulls of these seeds have all been cracked and the kernels eaten by birds.

The final collection of seed was made from the six mil-acre seed catchers at McNeill, and yielded practically nothing but a few blanks. Evidently the fall of longleaf seed is of relatively short duration, in contrast to that of such species as Douglas fir.

Naval Stores

Raising of tins and cups was finished, and there remained about a day's work putting on a jump streak at Sampson Lake to make all the trees now under test ready for the 1928 season. A few days were spent in the vicinity of Lake Butler on field work preliminary to laying out new test trees.

Harper spent most of the month computing yield in ounces over diameter breast high for slash pine for 1925 to 1927 inclusive and longleaf for 1926 and 1927. Since individual tree yields were available for all but the 1927 yields (yields here were weighed by diameter groups in the field) the coefficient of correlation and standard error

as well as the straight line of regression were obtainable. On the basis of 30 streaks to a chipping season the 1926 season or second year of slash pine working showed the greatest yield, 1927 next, and 1925 the poorest. The longleaf showed quite an increase in yield of 1927 over 1926.

Forestation

Gemmer and Lloyd prepared two additional seed beds at Camp Pinchot. Part of the seed sown in the Camp Pinchot nursery during the month had begun to sprout by January 31.

A hasty examination of the plantation put in at Camp Pinchot in December showed all the slash pine in very poor shape, with about 10 per cent already dead. The Monterey pine was nearly as bad, with five per cent already dead. Longleaf grown in the open was also failing, with three per cent already dead, but the longleaf covered with cut brush and planted in standing brush both looked fairly well.

Although this year's storage tests are admittedly only incidental and preliminary to better tests we hope some time to set up, Wakeley did manage to get the weights of all samples stored. This is the first time any tests put up at the Station have been weighed. Two lots of seed were held out; one was devoted to cutting tests, in the hope of showing some relation between such tests and actual germination tests, and the other was used for a determination of moisture content at time of storage. The moisture content proved to be 11.6 per cent.

Protection, Others

Wahlenberg and Hills mapped the 33 hundredth-acre quadrats in the burned half of the Pa-1 pasture at McNeill. This lot includes the five new quadrats recently established by Wahlenberg. Counts showed an average of 30 to 40 thousand longleaf seedlings per acre coming up from the 1927 crop, with a maximum of 75 to 85 thousnad per acre on restricted areas. Wahlenberg has improved the technique of quadrat examination considerably, and is actually mapping as well as counting all seedlings in the cotyledon stage. This should expedite reexaminations after the burn.

Gemmer at Camp Pinchot reports about 95 per cent of all longleaf seedlings on plots infected with needle blight.

Hardwoods

Lentz spent most of the month in the field, visiting a number of hardwood lumber companies and going over hardwood holdings in north Louisiana and south Arkansas. He is confining his attention at first to the economics of the hardwood industry, general interest expressed in the work by hardwood operators, probable duration of cut, typical conditions found on hardwood lands, and extent of damage by fire. Fire damage in hardwoods has been belittled by many people in the past, on the ground that fire does not occur as often or burn as hotly in hardwoods as in pine. Lentz finds, however, that damage has been very extensive, and notes particularly the great damage done in the dry season of 1924.

He also reports remarkable acceleration of diameter growth in hardwoods on areas covered by last spring's floods.

-----#-----

CALIFORNIA FOREST EXPERIMENT STATION

General

Director Kotok left for a Washington detail on January 5.

A forestry seminar is being conducted this semester for members of the forestry school faculty, graduate students and the experiment station staff. The weekly discussions have thus far been devoted to successional relations in silviculture and grazing. The sessions are well attended and very interesting.

Meetings of the Investigative Committee and Advisory Council are in the offing and some time has been given to preparing material for these.

Management

Work was continued on the methods of cutting study by Dunning, Siggins and Clements. Siggins has completed the computation and report for two of the older Stanislaus plots. Computation was also completed for the two Lassen plots in western yellow pine, established in 1921.

The logging damage phase of the Strawberry plot on the Stanislaus, established this spring, has just been completed by Berry and Hughes of the District Office.

Siggins has made a series of photographs of 2-0 seedlings growing in nutrient solutions. By repeating these later in the season we will have a set of repeat photos of root development that should be highly interesting.

Barranca Erosion Study. Finishing touches were put on construction features at the Barranca reservoir and on the intensive run-off plots. Instruments at the reservoir now comprise two water-stage recorders, one standard rain gage and one tipping-bucket weekly recording rain gage. At the central instrument station in the burn are installed a standard rain gage, anemometer, hygro-thermograph and a set of maximum-minimum thermometers. Five standard rain gages are disposed at suitable points on the watershed. The Barranca reservoir was intensively surveyed to determine its capacity, and permanent reference points were established to facilitate the measurement of sediment.

At Lowdermilk's intensive run-off plots are installed two tipping-bucket rain gages and four tipping-bucket run-off recorders. High winds and dust storms created severe conditions for these instruments but after much painstaking adjustment they have all been placed in good running order. Although the season's rainfall in the Devil Canyon region has totaled more than eight inches to date, there have been no storms of run-off producing intensity.

Of great importance to our public cooperation was the visit of Chief Hydraulic Engineer F. H. Hay and assistants Cornick and Goodrich, of the Los Angeles County Flood Control Commission. These men were favorably impressed with our installations and had little criticism or suggestion to offer. They are planning to conduct similar studies in Los Angeles County and plans were discussed for cooperation between the Flood Control Commission and the Experiment Station.

Devil Canyon Nursery. Plans were completed for the distribution of all stock surplus to our needs, and several small lots were sent out during the month. Mr. Weaver gave a lecture and planting demonstration to a picked crew of short-term men who will do the planting on the San Bernardino National Forest in February.

Arrangements were made with the Los Angeles County Forestry Division for seed supplies and seedling stock for our 1928 requirements. A supply of seeds of chaparral species collected by the Station was furnished to Doctor F. E. Clements for experimental use

at the new Acclimatization Gardens of the Carnegie Institution at Santa Barbara. A similar supply was previously sent to Doctor E. B. Copeland for use in the California Botanic Garden at Santa Monica. Shipments of planting stock were received during the month from Department Plant Introduction Gardens at Chico, California, and Washington, D. C.

A series of planting experiments to be executed in Devil Canyon during February was blocked out by Kraebel and Weaver, as were also additions to the arboretum.

Type Map. On January 9, Doctor F. E. Clements, Kraebel and Wieslander met with Cecil and Anderson of the Angeles Forest, in the Arroyo Seco district of that forest to discuss chaparral types and mapping methods. Next day, the three first-named met again with the six men who are doing the field work under Wieslander's supervision and went thoroughly into all phases of the problem. Since type mapping in the chaparral is an arduous and often puzzling process, this field meeting helped greatly to clarify the ideas of the field force and to standardize the procedure. The data as now gathered will be adaptable for use both in fire hazard rating for administrative officers and in the Station's broader study of chaparral response to fire and climatic factors.

Entomology

The short reports and odds and ends have been cleaned up so that all of Person's time is being spent on the two main projects of the year, namely, the Cascadel studies on attraction, tree selection and predators of the western pine beetle, (Dendroctonus brevicomis), and the sample plot tree selection studies.

We now have data from one 80-acre and two 40-acre sample plots, representing low and high western pine beetle infestations. These data are being worked up to show the type of tree most susceptible to attack by the western pine beetle. The trees on these plots were classified according to Dunning's new tree classification. The work already completed shows that the trees in classes 4 and 5 are most susceptible to insect attack and that trees in classes 7 and 2 are more susceptible than trees in classes 1, 3 and 6.

Mr. George Struble, who assisted in the field work during the 1927 season, has been assigned to the Station to assist Person in the compilation of data.

FOREST PRODUCTS

The transfer of Products to the Experiment Station from the District Office seems to be bearing out our expectation of a smaller volume of distraction by miscellaneous calls. We have learned of no serious requests that have failed to come to us by reason of the transfer but the volume of casual inquiries is considerably reduced.

Wood Identification

During January our identification service was sought in commercial cases involving a total of $106,000. Apparently circumspection is not the least of the qualities required for wood identification. In one case during the month the contractor submitted samples which were unquestionably the wood specified, while the purchaser's samples, understood to be taken from the completed furniture, were unquestionably not the wood specified. In another case the purchaser evidently did not know that the lumber company furnishing the material was in contact with us and reported to the lumber company a decision by us which was exactly contrary to the one actually given.

Professor Sampson of the University of California Forestry School has made an urgent suggestion that the working up by Forest Products of keys to the identification of the wood of chaparral plants in California would be of very great assistance to fire research, ecological research, and to the district administration in fire cases, by permitting the determination after severe fires of the kind of cover existing before the fires occurred.

Moisture Content

Growing interest among lumber manufacturers in the moisture content of their lumber was indicated by further requests for data. The study made last year by Mr. French of the Laboratory, assisted by Mr. Brundage of this office, has certainly proved to be a worthwhile project, both in respect to the data actually gathered and to the interest which it has awakened and changing attitude which it is apparently influencing on the part of the lumber manufacturers with respect to moisture standards.

Utilization of Native Oak

The Southern Pacific Company is giving consideration to the possibility of using California oak for ties. Information about oak stands in the State which might be suitable and available for this use was gathered from various sources and submitted to the railroad company.

Lumber Census

We have been fortunate in being able to secure for the conduct of the census work in this biennial year, Mr. John Sammi who has had experience with it in past years, in addition to atechnical forestry knowledge that is not always available for such work. Mr. Sammi began work on January 16. New office record cards have been worked out and mimeographed, also a form for special information in respect to the California lumber industry which the office desires to obtain for record, such as sawmill equipment, the per cent of cut kiln dried, the number of kilns in use, remanufacturing operations, etc. The census material finally arrived after delay in transit from Washington and the canvass will now proceed as rapidly as possible.

Heptane

The report on the heptane work for the past year is practically completed. Mr. Hill is working with Mr. Tihomiroff on several phases of the project. Prospects for the continuance next season of the commercial tapping by the California Chemical Corporation begin to look slender. The disturbing factor seems to be the development of cheaper substitutes for heptane by the Ethyl Gasoline Corporation. The outcome is not yet clear, however.

-----#-----

PACIFIC NORTHWEST FOREST EXPERIMENT STATION

In line with a recommendation made by the Advisory Council at its meeting last summer, a questionnaire has been sent to all agencies which may have done at any time any forest research. A copy was sent, for example, to the botany departments of the Oregon and Washington colleges, to the other government bureaus, and to several lumber companies and individuals. The returns are not

all in but so far they show a disappointingly small amount of research by any agency other than the Forest Service. At the same time various ones, both at the Experiment Station and at the District Office, have been digging through the old files and listing all past and present projects. It is proposed to prepare a descriptive list of these projects similar to the one the Northeastern Station prepared and send to all agencies that might be interested. This same questionnaire requests suggestions as to the most important projects to be undertaken in the next five years. It is rather disappointing to note that nearly all the suggestions made are on trivial details and miss the really important lines of study which are going to make continuous forest production a reality.

Miss Wertz and Mr. Munger have spent considerable time on a history of the Station, commencing with the establishment of the Wind River Station in 1912. A rough draft has been sent for checking to Dr. Hofmann and others who were intimately connected with the early years.

Munger and Simson spent an interesting half afternoon at the Crown-Willamette Paper Company nursery near Portland, where there are now approximately 10 million Sitka spruce. The company had such extraordinary good luck in its seed beds that they have several million more seedlings than they wished. If anyone wants to get some good Sitka spruce stock here is an opportunity. The nursery is now shipping to their planting crew of 42 men in the lower Columbia region. Long-Bell also has a planting crew at work.

A meeting of the Advisory Council is called for February 13. A review of the season's activities and a statement of the status of each project has been prepared to send to all members prior to the meeting.

Rumor is current that a merger of some of the stronger Douglas fir mills is forming, which is interesting news to foresters as it seems probable that large, strong organizations such as this will be more interested in putting their entire holdings on a sustained yield basis than are the individual mills. The merger so much talked of a year or two ago is reported to be making no progress.

R. E. McArdle surprised us by announcing his marriage on December 29 to Miss Dorothy Coppage of Baton Rouge, La. Both the bride and groom are continuing their studies at the University of Michigan, he for a doctor's degree preparatory to fire studies, and she for a master's degree in botany.

Isaac has completed a progress report on storage tests of noble fir seed. The study brings out the interesting fact that noble fir seed placed in cold storage and kept at a temperature of 10° to 14° F. may be held at least four years without loss of viability, while heretofore difficulty has been experienced holding the seed for a single winter without loss, under ordinary methods of storage.

A light snow blanket in Portland gave an opportunity to conduct some seed dissemination tests on a broad level field actually within the city limits. To get some tests in very light winds small pilot balloons, furnished by the Weather Bureau, were used. In winds over five or six miles an hour, however, the captive balloon tends to blow down, so that taking up the seed by a kite is more satisfactory. At the request of those in other regions we are adding this year to the list of species some tests of Sitka spruce, western white pine, western yellow pine, and Southern long leaf pine.

Meyer returned after a trip to the East, in the course of which he visited the California, the Southwestern, the Southern, and the Northeastern forest experiment stations. A week in Washington proved to be of great value and stimulus. In his absence mensurational computation went on continually, so that when he came back he had a flying start. An interesting attempt, even though it proved to be a failure, was made when a set of height curves for a range of ages and sites was produced by multiple curvilinear correlation. The material consisted of over 600 heights taken in the course of a survey of an extensive stand of second growth. The variables considered were age of stand, site, d.b.h., and height. The original coefficient of correlation was high (.9528). Some curvature was indicated after the first estimates were read and the process went on through the second and third estimate stages, when an apparent satisfactory fit was obtained. But when the curves were finally plotted out, the results were extremely disappointing and could not be used. In other words, age, site, d.b.h. do not alone define height; that is certain. Whether the problem can be at all solved by curvilinear correlation is interesting and should be worked on.

Simson spent almost the entire month on the compilation of the static study which is now nearly ready for the writing of the report.

Mapping of the lightning reports will be completed in a few days and there remains only the coding to do. There is a steady improvement in the quality of the reports turned in. Complete figures are not yet available, but 1927 appears to be one of the worst lightning storm years of the decade in District 6.

-----#-----

NORTHERN ROCKY MOUNTAIN FOREST EXPERIMENT STATION

The District Investigative Committee held its annual meetings January 12, 13, and 14. As the full report of the proceedings will appear in the annual report and program, which will be in circulation by the end of February, it is desirable to mention here only a few of the high lights. Although the Investigative Committee consists of only ten Forest Service members, there were 33 men in attendance this year, 19 from the Forest Service and 14 from other agencies, including Entomology, Blister Rust Control, Weather Bureau, the State Forester and Universities of Montana and Idaho. The meeting was held in the Forest School Building at the University of Montana.

One of the important features of the meeting was a discussion of the proper functioning of this Committee and its efficiency of operation. It was generally agreed that the work of the Committee is decidedly different now from what it was six or eight years ago. Both the volume and scope of forest research in this region, particularly by the agencies outside the Forest Service, have so increased during the last few years that it is now nearly impossible to size up the situation and arrive at dependable conclusions concerning the distribution and concentration of effort merely by reviewing in detail the reports of each project. A larger perspective is needed.

To get an idea of the regional research activities, as reflected by the costs, and to check a preliminary survey Weidman had already made, each agency present was asked to submit estimates of funds expended during the past year on forest research in this region. The assembled replies showed the interesting total of $88,000 for Federal and State research alone. Private work, such as that by the Anaconda Copper Company, the Western Pine Manufacturers' Association, and the Western Forestry and Conservation Association, was not included. The estimates were prepared somewhat hurriedly on the basis of a rather sharp distinction between administrative experiments and more systematic research, and were generally thought to exclude too much of experimentation which really should have been classified as research.

Two sub-committees have been appointed to study these matters during the present year and to report in advance of the next annual meeting. The purpose of the first committee is to examine the functions and efficiency of the District Investigative Committee and to prepare an outline for conducting the next meeting. The idea is to make the meeting more effectively serve the present day needs. The purpose of the second committee is to define research as distinguished from extension and administrative experimentation and to collect on that basis the figures on expenditures. The ultimate idea in this is to determine if possible whether emphasis is being properly and proportionately placed according to needs by regional problems and lines of work.

As mentioned in last year's Investigative Report and Program there has been some dissatisfaction with existing District 1 volume tables for mature stands. Various checks made by Haig and other forest officers have shown that in certain cases the present tables are in error as much as 25 per cent. A thorough checking of all these tables is now in progress, the work being done cooperatively by the Experiment Station and the Office of Management, in order to determine what new tables, or revisions, are necessary.

Volume computations for eight thinning plots were completed during the month by Marshall and Kempff, with the assistance of Mr. Bowman detailed to the work by Management. The calculations had been deferred for nearly a year in order to utilize Haig's new tables. The results will be incorporated in an article to be prepared this spring by Kempff.

Using the laboratory facilities of the University of Montana, Marshall has commenced a determination of the viability of 600 seeds of each of six tree species. These seeds constitute check samples of 52,000 seed which were buried in the duff last fall in the 8-year experiment to determine the possible duration of natural seed storage. Duplicate tests in sand flats and on moist filter paper are being made for each species. In addition, 227 potentially germinable seeds, recovered after a controlled light broadcast burn, were sown in the sand flats. These 227 seeds were all that could be recovered, and showed any signs of chance to germinate, out of 1000 seeds sown in the duff on an area of two square feet before the burn was commenced.

-----#-----

ROCKY MOUNTAIN FOREST EXPERIMENT STATION

December Activities

Most of the office time during this month was spent in transcribing and compiling growth data of the Fremont and Pike thinning plots in Douglas fir sapling stands, which had been remeasured during the year. The Fremont end of the project involves a 7.7 x 7.7' thinned and an unthinned plot. The Pike block includes three plots thinned to 5 x 5', 6.5 x 6.5', and 8 x 8', with an unthinned check plot. All plots are approximately an acre in size. Actual net increment per acre annum for nine and one-half years on the Fremont area amounts to 23 cubic feet for the unthinned plot and 24.2 cubic feet for the thinned. The Pike unthinned plot in six years shows a similar increment of 22.4 cubic feet as against 32.6, 29.5 and 26.1 cubic feet for the thinned plots in the order of decreasing density of the stand.

The percentage of net increment gain, based on original volume left after cutting, is four and one-half times greater on the two more heavily thinned plots on the Pike than on the unthinned plot, indicating a remarkable stimulation in growth of individual trees. This effect is much less noticeable on the poorer soil at Fremont, where growth stimulation does not follow so promptly after cutting.

Intensive study of the mysterious "pitch girdle" disease on the Pike plots indicates that thinning helps materially to reduce the amount of active infection and losses occasioned by the disease. 71.2% of the trees in the unthinned stand are infected against 33% in the thinned plots. Even though 80-85% of the sickly trees have the disease only in mild form, there is an appreciable loss in growth by virtue of the presence of the disease. On a representative area it was found that all classes of diseased trees average approximately 90% of the growth rate of healthy trees.

Dr. Metcalf of the Bureau of Plant Industry, after a brief examination of the stand, stated that the disease was not the European Larch canker, and, in his opinion, was new to science. The disease is produced by a parasitic fungus which spreads through the bark of young trees and eventually attacks the cambium. It manifests itself usually by a flattening of the surface of the stem, due to shrinking of the bark, and by characteristic cankers. Hartley has observed similar behavior in certain tropical diseases.

January Activities:

Bates arrived at the Station on January 2. He spent two weeks in cleaning up the eighth and last series of soil quality in relation to growth tests, namely, the nutrition series. By far the most interesting result of this study, even though the data have only been casually analyzed, was the growth of all species of seedlings; western yellow and lodgepole pines, Engelmann spruce, and Douglas fir, in the water-washed Nebraska sand, and the development therewith of mycorrhiza and nodules on the roots, indicating inoculation of this soil with these organisms. Their occurrence in Nebraska sand is a matter of extreme importance, for it indicates the possibility of making use of them to assist growth both in the nursery and in the field. It is fairly evident that chemical applications to acidified sand acted upon the seedlings quite largely through the development of these organisms, whose chief effect is to be noted on the vigor of root development.

After returning to the Colorado Springs office from the field station, Bates was chiefly occupied for the rest of the month with assembling and summarizing some of the climatological records and data

which have accumulated in the type study. Roeser also spent some time on this work, but the bulk of his time was directed toward the preparation of the annual investigative program, which was presented before the Committee on January 30 and 31. Bates was requested to serve on the Committee in order that advantage might be taken of his past experience in directing the work of the Station from its founding in 1909 until the middle of 1927.

February Plans

Bates will complete the report on the natural reproduction of lodgepole pine on experimental areas in the Central Rocky Mountains during the early part of February, and will leave about the eighth for Madison. Roeser will work over the District Investigative Program and embody in it the recommendations of the Committee, so that the report, which is now overdue, will get to Washington as soon as possible. Following this, he will prepare a progress report on "Degrees of thinning in Douglas fir sapling stands" and a report on the "Occurrence of Pitch Gridle in sapling Douglas fir stands on the Pike Forest." The working plan for reproduction studies on cut-over areas will be revised, and another plan covering methods of brush disposal in the Black Hills region will be prepared, following action of the Investigative Committee recommending that this project be considered of especial importance and that installation of plots should be undertaken during the coming season. The rest of the month will be used in compiling climatological data in the type study.

-----#-----

MANUSCRIPTS

Pacific Northwest

Top Pruning of Douglas Fir Planting Stock, J. F. Kummel.

Storage of Shipping Stock at Wind River Nursery in Spring, 1927. Otto Lindh.

Silvanook Celebrates Revival of Lumber Industry. (For O.A.C. Annual Cruise). T. T. Munger.

A Practical Basis for Slash Disposal, with Special Reference to the Pacific Northwest (For Michigan State College Forestry Annual) R. H. Westveld.

Office Report on the Study of Relation of Stocking to Stand Characteristics. W. H. Meyer.

Storage Tests of Noble Fir Seed. Leo A. Isaac.

A Brief History of the Pacific Northwest Forest Experiment Station, including the Branch at Wind River. T. T. Munger and June H. Wertz.

California

The Utilization of Logging and Sawmill Waste with Special Reference to Pulp and Paper, by C. L. Hill. (Address before meeting of Northern California Industrial Committee, California Development Association. To be published in the California Journal of Development.

Northern Rocky Mt.

Modifications of Western Yellow Pine Root Systems. W. G. Wahlenberg (For J.A.R.)

Southwestern and District 3

Annual District Investigative Committee Report, January, 1928.

District 2

Annual District Investigative Committee Report, January, 1928.

Rocky Mountain

Relation of Grazing to Erosion and Reproduction. Jacob Roeser, Jr. Progress Report, 1927.

Central States

The Work of the Forest Experiment Station. E. F. McCarthy. Address before Ohio State Forestry Association, Feb. 1, 1928.

Regeneration for Pulp. E. F. McCarthy. Paper read before meeting of the Woodlands Section of the Canadian Pulp and Paper Association, Montreal, Quebec. January 26, 1928.

-----#-----

IN PRINT

Averell, J. L. European Study for Foresters. (The Timberman). (January, 1928.)

Beal, J. A. The development of the proventriculus of Pityogenes Hopkinsi Swaine. (Annals of the Entomological Society of America, December, 1927.)

Brown, R. M. Survival and Growth of Trees Planted in Rock Creek Arboretum, Washington, D. C. (Jour of For., January, 1928)

Gisborne, H. T. Early and Modern American Fire Studies. (Jour. of For., January, 1928).

Kittredge, J. Management of the Maple-Basswood Type in Northern Minnesota. (Jour. of Forestry, Dec. 1927).

McCarthy, E. F. Analysis of Fire Damage in Southern Appalachian Forests. (Jour. of For., January, 1928).

Meyer, Bernard S. The Measurement of the Rate of Water Vapor Loss from Leaves Under Standard Conditions. (Amer. Jour. Bot. 14: 582-591. 1927.)

Wakeley, P. C. On Writing Up Notes. (Jour. of For., January 1928).

Zon, Raphael (joint author with) America and the World's Woodpile. (W. N. Sparhawk) (U.S. D.A. Cir. 21, Jan. 1928.)

Zon, Raphael, Timber Growing and Logging Practice in the Lake States. (Page proof)

-----#-----

OFFICE OF FOREST PRODUCTS - District One

Publications

Additional results of the lumbering studies are being presented through a series of articles in the Timberman. The December issue contained the first installment of an article entitled "Size of Timber, Amount of Defect - Important Factors in Lumbering," by M. Bradner and S. V. Fullaway, Jr. The matter is presented largely in tabular form with a minimum of interpretative matter. The article is divided into four installments the last of which was completed during the past month and is to appear in the March issue of the Timberman. The December installment presents an analysis of sound logs; installment two deals with sound trees; installment three with stand tables, and installment four with defective logs.

A thorough analysis of the data will enable the lumberman to determine the effect of size and defect in their holdings upon production costs and values, and their influence on profitable tree and log utilization.

A rather interesting effect of size of logs upon value is brought out under the discussion of sound logs. Twenty-inch logs would generally appear to be of greater value per M feet lumber tally than six or seven-inch logs. However, due to a varying spread in price this is not always true. Western (Idaho) white pine is used as an example. Because of the relatively high value of No. 1 and No. 2 common lumber (sound knotted stock) logs of trees containing a majority of these grades may show a value per M feet lumber tally greatly in excess of that which the size will warrant. This condition is not due to a temporary fluctuation in price. Since 1917 the spread in value between No. 1 and No. 3 common grades of Idaho white pine lumber has increased from eleven to twenty-four dollars. It is due to the sound knotted stock found in logs from young thrifty trees. The younger the tree, the greater the percentage of No. 1 and No. 2 common, and the greater its offsetting effect on the value of select grades in the larger trees.

Little-Used Species

The final report on western larch was forwarded to the Laboratory last summer. At that time it was planned to present certain phases of the larch problem to the industry through a series of articles in one of the trade journals. Due to the press of other activities, preparation of this material was postponed until this winter. During the month of January Mr. Anderson practically completed the first article intended for publication in an early issue of The Timberman.

A recent trip to the Anaconda Copper Mining Company camps near Missoula revealed an encouraging development in the utilization of larch. The Company has transferred practically all of their mining timber operations to the camps supplying their Bonner sawmill. Larch and Douglas fir trees are cut to an 8-inch top diameter; in the case of a smooth evenly knotted top to 6 inches. Larch logs are handled with as much care as the pine.

Census

The basic mailing lists received from the Bureau of the Census were completely revised and approximately 200 new names added before starting the 1927 canvass in Idaho and Montana. The first request schedules were mailed to the entire address list for the State of Idaho during the period from January 14 to 17, and all Montana schedules were sent out during the last half of the month. Although a great many changes have occurred in the directory lists since the last biennial census, the total number of establishments to be canvassed this year is found to be practically the same as in 1925.

Preservation

A new experimental project in which it is proposed to use Cold Treater Dust as a preservative when resetting and stubbing about 35 miles of pole line extending from Dell, Montana, to the upper Sheep Creek Basin on the Beaverhead Forest has been favorably considered by the District Office. Suggestions and specifications for the preparation of the poles, application of the treater dust and kind of records to be kept were prepared by Mr. Whitney for the Office of Operation and sent to the Forest Supervisor on January 16.

Lumber Prices and Movement

	Annual 1926	First Q. 1927	Second Q. 1927	Third Q. 1927	Dec. 1927
Idaho White Pine	$37.77	$38.48	$38.41	$36.77	$29.57
Pondosa Pine	26.33	26.28	26.72	25.97	23.77
D. Fir and Larch	17.78	17.62	18.92	18.83	16.52
White Fir	19.10	16.46	18.02	18.56	17.64
Spruce	23.73	23.77	24.09	23.34	20.89

	Dec., 1926	Dec., 1927
Cut	88,596	73,674
Shipments	113,509	92,674

	Annual, 1926	Annual, 1927
Cut	1,742,613	1,480,169
Shipments	1,792,638	1,555,694

General

The District Investigative Committee meeting was held January 12 to 14. The Products program proposed for 1928 was approved.

The greater part of the month was devoted to the tabulation of data, preparation of manuscripts, and the 1927 Census of lumber and timber products.

Mr. Bradner has been on sick leave since January 26, and will probably be away from the office for a few days more.

-----#-----

OFFICE OF FOREST PRODUCTS, District Six

Census

The work of taking the 1927 census of lumber, lath, shingles, cooperage, and veneer, in Oregon and Washington, was started during the month. Questionnaires were sent to 2,016 companies, with 432 replies received to date.

A temporary stenographer is being employed on this work. Starting February 1, Technical Assistant I. J. Mason, will be detailed from the Snoqualmie National Forest to assist with the survey, particularly the editing of the returns.

In accordance with statistics prepared by the Pacific Lumber Inspection Bureau, cargo shipments of lumber from British Columbia, Washington, and Oregon amounted to 5,568,599,190 feet in 1927, as compared to 5,560,064,096 feet in 1926. Cargo shipments from British Columbia in 1927 amounted to 740,200,330 feet, an increase of 3.9 per cent over 1926; from Washington, 3,605,962,606 feet, an increase of 1.5 per cent; and from Oregon, 1,222,436,254 feet, a decrease of 0.2 per cent.

Domestic cargo shipments from this region in 1927 amounted to 3,625,886,074 feet, a decrease of 3.7 per cent, while cargo shipments amounted to 1,942,713,116 feet, an increase of 8.3 per cent over 1926.

Cargo shipments to California amounted to 1,551,620, 304 feet in 1927, representing a decrease of 8 per cent as compared to the previous year. Shipments to the Atlantic Coast were also slightly less in 1927, amounting to 1,919, 668,928 feet the past year.

In 1927, Australia took 351,549,744 feet of British Columbia, Washington, and Oregon lumber, China 158,846,674 feet, Japan 933,033,227 feet, South America 199,463,726 feet, and the United Kingdom and the Continent 180,848,840 feet; smaller amounts went to Africa, Central America, Egypt, India, Mexico, New Zealand, South Sea Islands, and the West Indies.

General Woods-Waste Survey in the Douglas Fir Region

The early part of the month was spent by Mr. Hodgson in preparing a statement to accompany the Taxation Study Report, more particularly as regards the indirect values accruing to communities, counties and states because of the major activities of National Forest administration.

He spent the balance of the month on his regular work, which at present has to do with the preparation of the report dealing with the general woods waste survey. A preliminary tabulation shows that wood losses amount to about 20 per cent of the original stand. This figure is based on averages for the entire Douglas fir region, as developed from 150-acre sample plots studied in 24 logging operations (six distinct districts).

Kiln-Drying Douglas Fir Common

Johnson spent a part of the month in working over the recent report of the kiln-drying degrade study conducted at the plant of the Oregon-American Lumber Company, Vernonia, Oregon, for publication in the February or March issues of the Timberman, more probably the latter issue. The manuscript necessarily included ever so much tabulated detail, so much so in fact that we felt doubtful as to whether the Timberman could use it up to the time they accepted it for publication. It would seem that lumber trade papers are now publishing reports which a few years ago they would have considered too dry, to say the least, for their readers, which if true is an indication of a growing appreciation of the usefulness of research.

Mill-Utilization Study

Progress was made by Johnson, assisted to an extent by Spelman, in compiling the data collected in the western yellow pine study at the mill of the Mt. Emily Lumber Company, LaGrande, Oregon. The work is not far enough along to indicate even probable results.

Felling and Bucking in the Douglas Fir Region

The time of Spelman was somewhat scattered during the month. However, he had made not a little progress in providing for the many details that must be studied systematically in connection with this proposed study.

Little-Used Species Study

At the request of District 1, and for use in connection with their study and report on lodgepole pine, Gibbons prepared a memorandum dealing with this species as related to this District.

-----#-----

RANGE RESEARCH

WASHINGTON

Mr. Matt J. Culley came in from the Santa Rita Range Reserve the last of January for the purpose of completing the manuscript on the Santa Rita investigations which he and Mr. R. R. Hill have in preparation. Mr. E. W. Nelson arrived from the Great Basin Station the first of February for the purpose of completing his manuscript on the management of black grama range in the Southwest. Both have settled very definitely into the compilation of their data.

In connection with the hearings on the Agricultural Appropriation Bill, a group of agricultural organizations including the National Lumber Manufacturers' Association and supported by the National Automobile Chamber of Commerce, The National Manufacturers' Association, the National Industrial Council and the "Better Understanding Between Industry and Agriculture" Movement, are making a very concerted effort to have the Agricultural Appropriation Committee approve all the increases recommended by the Bureau of the Budget, and if possible, increase them.

Botanical Society of Washington Interested in Range Research

The program committee of the Botanical Society of Washington has made it possible to present a series of addresses on range research during the winter meetings. Mr. Chapline spoke at the December meeting on "Twenty Years of Range Research." At the February meeting, Mr. W. B. Miller of the U. S. Biological Survey will speak on "Reindeer Forage in Alaska." Also, at that meeting, Dr. C. Dwight Marsh of the Bureau of Animal Industry will talk on some poisonous milk weeds. Talks are also scheduled for Messrs. Dayton, Culley and Nelson at later meetings.

Visitors

Director James T. Jardine of the Oregon Agricultural Experiment Station was in Washington during the latter part of January organizing the study of research and graduate work in the Land Grant Colleges and Universities in connection with a thorough study of education in these institutions, which is being made by a committee of educators of national prominence under the direction of the Bureau of Education in the Department of Interior.

Mr. W. B. Miller of the Biological Survey on reindeer investigations with headquarters at Fairbanks, Alaska, has been in Washington for about a month preparing a number of reports on his work. He has visited the office of range research several times to discuss our work, and especially, to consider the methods and instruments which will be of value in handling the studies on reindeer ranges in Alaska.

-----#-----

RORAGE INVESTIGATIONS

Range Plant Routine

Two collections, representing 205 specimens, were submitted to the Bureau of Plant Industry during the month for identification. Five collections, representing 102 specimens, were reported on the field. Twenty-nine Carices, from 14 collections, were returned from B.P.I. and reported on to the Districts. 57 photostatic prints of economic notes were sent to the field; 62 plants were check-identified and reported on the Districts. 254 plants were mounted during the month. About 250 specimens were filed in the herbarium, including eight genera added thereto.

Some Interesting Plant Specimens

1. St. Joe N.F. Mr. Howard R. Flint's no. F-1, Washington office serial no. 50624. Apparently the first record for Idaho (and a considerable range extension) of the Californian Carex californica Bailey. Reported to be "a very common sedge between Elk Prairie and Chamberlain Meadows" on the St. Joe.
2. Coronado N.F. Mr. Robert Thompson's no. 79, Washington office serial no. 55008. Ipomoea leptophylla Torr. Moderately grazed; found in patches. Claimed locally to be poisonous to cattle and report made that it has killed several head. Permittee states that losses are from the herbage, the root being too deeply seated and the soil too heavy for stock to pull it up. Dr. C. Dwight Marsh indicates that there is no positive evidence that the species is poisonous but states that it has been suspected.

3. Datil N.F. Mr. W. G. Koogler's no. 81, Washington office serial no. 53530. Carex davyi Mackenzie. Hitherto this sedge has been known only from California!

Through the courtesy of Mr. O. C. Ingram what is evidently the exact specimen on which official photograph 77365 is based (and which is Plate XXXI of "Carex tolmiei subsessilis" of Dr. Sampson's bulletin, "Important Forage Plants") has been located and presented to the Washington office herbarium. It is Sampson's no. 360, Washington office serial no. 42108, from the Wallowa N.F., and is Carex gymnoclada Holm, fide Mr. K. K. Mackenzie.

Some time was spent by Dayton during the month in assisting District Forester Flory of Alaska, the newly appointed Commissioner of Agriculture in that Territory, in establishing certain contacts with various officials in the Department.

Minor Publications

An article was prepared by Dayton for "The Producer" on some outstanding forage grasses of western cattle ranges. An illustrated paper, "What is Agoseris apiculata Greene?" (a species based by the late Dr. Greene on our serial no. 2404 from the Holy Cross National Forest, but the type specimen lost) has been sent to the Proceedings of the Biological Society of Washington. A paper has been sent to Torreya entitled "Notes with certain National Forest range plant specimens: I. Some notes of economic or morphological interest; II. Some apparent range extensions of western plants."

-----#-----

SANTA RITA RANGE RESERVE

Range and Stock

Stock continue in good to excellent condition over the entire Reserve, with an abundant supply of feed remaining on the ground. There have been very few sales during the past two months, Proctor and Nicholson both sold some small calves, averaging 250 to 300 pounds, locally at eight cents. Parker and Ruelas have recently bought 20 head of pure bred bulls apiece. A short spell of cold weather just before the holidays seemed to hurt stock more than would be expected, but unusually warm weather for the past ten days has helped out a great deal. Winter annuals have made a pretty good start and some green shoots are starting on the perennial grasses, but the soil is drying out very rapidly due to no precipitation at all during the month of January.

Predatory Animal Control

There seems to have been a tremendous increase in the number of coyotes this past year and stockmen have suffered some loss from them. Help from the Biological Survey was requested and Trapper W. A. Knibbe arrived on the Reserve about the 13th of January. He was called back to the sheep ranges north of Tucson on the 26th but he thoroughly poisoned the Parker, Proctor, and Ruelas ranges before he left. If the number of dead skunks to be seen along the road is any indication, there should not be a coyote left on the range. We have been visited by only one wolf so far this winter and he only stayed long enough to leave a few tracks, for which everyone is very thankful.

Miscellaneous

District Forester Pooler and D. A. Shoemaker, Inspector of Grazing, D-3, attended the annual meeting of the Arizona Extension Service held in Tucson at the University of Arizona on January 11. Their very excellent addresses on Range Management were well received by the Extension workers and it is to be hoped that this beginning of a contact between the Extension Service and the Forest Service will be followed up. Other Forest officers attending the meeting were Supervisor Winn and Assistant Supervisors McKenzie and Anderson of the Coronado, and Director Culley and Junior Range Examiner Turner of the Santa Rita Range Reserve.

During the early part of January Director Culley's time was taken up with the preparation of the Annual Report which was finished in time for the District Investigative Committee Meeting. Turner's time for most of December and the first week in January was used in riding with Nicholson and securing a count of his stock. This has materially slowed down the compilation of the summer's field work, but it was absolutely necessary to get an accurate check of the pasture records. The latter part of January has been used principally to clear up some of the routine work and to finish the maintenance of the gateless enclosures.

-----#-----

JORNADA RANGE RESERVE

Range Conditions and Precipitation

No precipitation has fallen this month; so far the winter has been very dry, but the weather has been quite pleasant.

Condition of Stock

In spite of the lack of green weeds, the entire herd is wintering quite satisfactorily. Calves should be in good condition for February delivery.

Investigative Work

The compilation of field data collected during the past season is well under way. Some temporary help is being secured for the computation of quadrat charts.

Visitors

Prof. Wm. G. McGinnies, Professor of Range Management at the University of Arizona, spent two days at the Station. He made a careful inspection of many phases of the experimental work, and offered many helpful suggestions.

Incidentally, Professor McGinnies helped start both Campbell and Canfield (the present Jornada personnel) into Forest Service work in District 1.

-----#-----